

# NATURAL HISTORY MISCELLANEA

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## A Population of the Carolina Anole \*

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Laboratory researches have contributed much to our knowledge of the life history of the Carolina anole, *Anolis carolinensis* Voigt, within recent years (Evans and Clapp, 1940a, 1940b; Noble and Greenberg, 1941) but few field data are available on growth, attainment of sexual maturity, and reproductive potential. This lizard is exceptionally abundant in the vicinity of New Orleans where professional collectors may collect 500 to 1000 in a single night from a few acres. The constant demand from carnivals for these lizards provides a profitable business for some southern pet stores.

An area of sparse oak-gum woodland near New Orleans supports a large population of *Anolis*. A professional collector took two samples from this area, one October 10, 1946 and another May 7, 1947. Each individual of the October collection was measured (body length, head width, tail length), weighed and dissected to determine the condition of the gonads. Follicle size and presence of oviducal eggs was the basis for determination of sexual maturity in the female and testicle size and presence of motile sperm in the male. **All** stomachs were removed for future analysis.

The October collection contained 186 females and 222 males. The adult males were sexually active; the testicles were moderately enlarged (maximum length 5 mm.) and the vasa deferentia contained motile sperm. Three females yielded sperm cells in cloacal smears. The ovaries were reduced; the maximum follicle in 100 females larger than 4.5 cm. in body length averaged 1.5 mm. in diameter. Only three females had oviducal eggs.

A frequency distribution based on the body length (Fig. 1) indicated the presence of large numbers of individuals of both sexes in the 3.0-4.0 cm. groups. These individuals and many of those in the size group 4.0-4.5 cm. are certainly young of the year. The absence of a large number of indivi-

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duals in the smallest group, 2.5-3.0 cm., suggests that few eggs are hatched in the latter part of the growing season. The bulk of the October population is composed of juveniles of both sexes. Only 54 (27.5 per cent) of the females and 91 (40.9 per cent) of the males were sexually mature.

The distribution pattern of the body lengths in the May sample is different from that of the October sample in that individuals of the smaller size groups, 2.5-3.5 cm., are not present and only four are present in the 3.5-4.0 cm. group. This difference in the distribution patterns may be explained on the basis of inadequate sampling or the alternatives, that hatchlings continue to grow during October to May or are eliminated by selective natural factors. The shifting of the mode in the male distribution from the 4.0-4.5 cm. group to the 4.5-5.0 cm. group and in the female distribution from the 3.5-4.0 cm. group to the 5.0-5.5 cm. group may be interpreted as a result of rapid growth in the hatchlings of 1946. A more rapid rate of growth in females than in males is implied. It thus appears that the reduction in number of individuals in the size range 2.5-4.0 cm. is a result of the growth of hatchlings during May to October.

Of the 312 females in the May sample 126 (40.3 per cent) contained oviducal eggs (26.7 per cent of the 4.5-5.0 cm. group; 67.5 per cent of the 5.0-5.5 cm. group and all of those in the largest groups). The smallest female to contain an egg measured 4.6 cm. in body length. The presence of mature females in large numbers (78.5 per cent of the sample) and the reduction in numbers of the lower size groups may be interpreted to mean that the early hatching females may become sexually mature early in the next season. The absence of mature females in the 4.0-4.5 cm. group suggests that those individuals hatching late or encountering unsatisfactory conditions for growth may not become mature in the first season after hatching. Of the 138 males in this sample, 110 (79.7 per cent) are in the size range (14.5 cm.) of sexual maturity.

Of the 126 females containing eggs, 92 had only one and 34 had two. There is a positive correlation between size and the presence of two eggs. Of the 30 females with eggs in the 4.5-5.0 cm. group, only 3 (10 per cent) had two eggs; of 81 in the 5.0-5.5 cm. group, 21 (26.7 per cent) had two; of 14 in the 5.5-6.0 cm. group, 9 (65 per cent) had two. The single individual larger than 6.5 cm. contained two eggs.

The egg-containing females of this sample had one or two large ovocytes measuring 3-6 mm. in diameter. As such ovocytes were not present in the females collected in November, it may be inferred that more than one brood is deposited. The number of broods is not determined but the presence of eggs in three of the October-collected females indicates that the egg-laying season is prolonged. Females have been observed with eggs in mid-

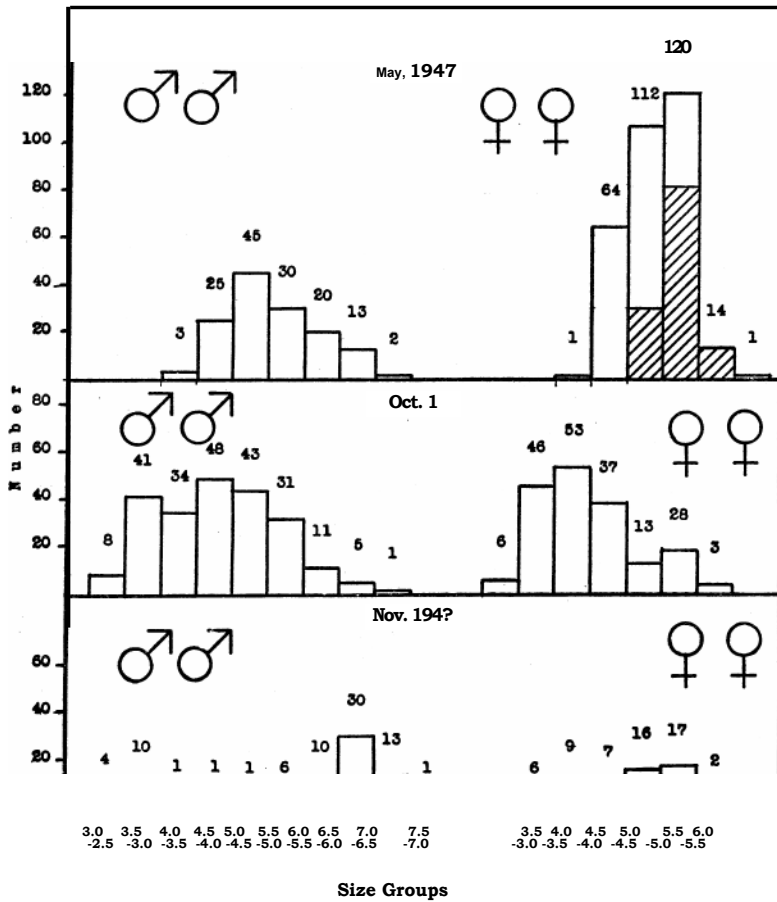


Figure 1. The distribution of the body lengths of lizards collected near New Orleans. The shaded parts of the histogram represent females containing oviducal eggs.

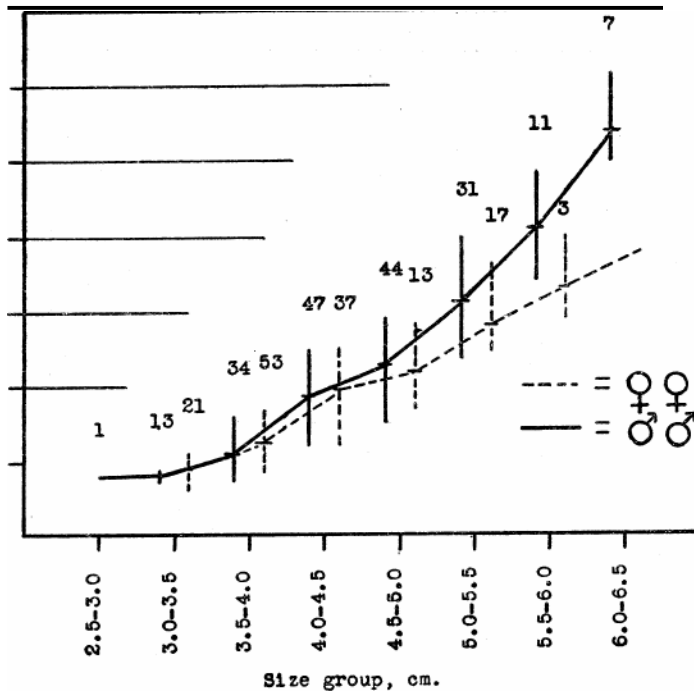


Figure 2. The relation of weight to body length in 333 lizards collected October 10, 1946.

April. The period in which eggs may be deposited, April to October, is unusually long for a North American lizard. Carr (1940) states that the eggs are laid in June and July in north Florida.

The distribution of body lengths of 134 lizards taken by John Boley, November 27, 1947, from an area within a mile of the one originally studied provides a basis for additional speculation on the population. The reduced numbers of males in the range 3.5-5.5 cm. is in strong contrast with the abundance of individuals in this range in the October 10 collection. This sample may have been taken from a population differing in composition from that represented by the former collections. The distribution of the males may be interpreted as two size groups representing hatchlings and adults. The other

alternative is to assume a selective sampling of large adult males. The latter may be correct since this collection was made during the day from the centers of palmettos and the other collections were made at night when palmetto centers were not examined. The absence of large males in the night collection may be a reflection of a behavior difference between the small and large males; the large ones tending to seek concealment in the palmetto hearts.

There is no significant difference in the length-weight relationship in juveniles but the large males are heavier in relation to body length than females (Fig. 2). The males attain a greater maximum length (6.7 cm.) than the females (6.4 cm.),

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*Natural History Miscellanea*, a series of miscellaneous papers initiated in 1946 as an outlet for original articles, more or less technical in nature, one to four pages in length, in any field of natural history. Individual issues, published at irregular intervals, are numbered separately and represent only one field of specialization; e. g., botany, geology, entomology, herpetology, etc. The series is distributed to libraries and scientific organizations with which the Academy maintains exchanges. A title page and index will be supplied to these institutions when a sufficient number of pages to form a volume have been printed. Individual specialists with whom the museum or the various authors maintain exchanges receive those numbers dealing with their particular fields of interest. A reserve is set aside for future exchanges and a supply of each number is available for sale at a nominal price. Authors may obtain copies for their personal exchanges at the prevailing rates for similar reprints.

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